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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,549	02/09/2004	Ken Furukuwa	81716.0119	1117

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EXAMINER

BEVERIDGE, RACHEL E

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/774,549

Applicant(s)

FURUKUWA, KEN

Examiner

Rachel E. Beveridge

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,5,6,8 and 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,5,6,8 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 10/223973.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The applicant claims, "a cavity is defined along the entire length of the metal column" (claim 2, lines 10-11). The applicant's original disclosure and claims failed to explicitly disclose the limitation requiring the space (or cavity) defined along the entire length of the metal column. Applicant merely discloses that it is preferable that a space is "secured between an inner wall surface of the through hole and an outer wall surface of the metal column" (specification, p. 11, lines 6-8).

Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The applicant's original disclosure and claims failed to explicitly disclose the limitation requiring the space (or cavity) defined along the entire length of the metal column. Applicant merely discloses that it is preferable that a space is "secured between an

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inner wall surface of the through hole and an outer wall surface of the metal column”
(specification, p. 11, lines 6-8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2,5,6, 8, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makoto et al. (JP406120634A).

Makoto discloses a method for making a ceramic board by preparing a ceramic substrate (figures 1-3[11]) with a through hole (figures 1-3[12]). Makoto also discloses a metal column (figure 1[13]) with a brazing material (figure 1[14A, 14B]) and metal circuit plates (figure 1[15A,15B]). Furthermore, Makoto discloses the metal column with brazing material within the through hole of the ceramic substrate and the metal plates on both sides of the substrate in order to fill the through hole (abstract). Makoto also discloses heating the brazing material and joining the metal column and the metal circuit plates together (abstract). Makoto discloses the metal column and brazing materials to be the “pin” (figure 1[13]) with a length slightly smaller than the length of the through hole (figure 1[12]), around 0.3mm to 0.4mm; thus, fitting within applicants said 40 to 140 μ m longer relative to the thickness of the ceramic substrate. Also, Makoto lists approximate values for the length of the brazing materials on each side of the metal

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column. Makoto discloses metal circuit plates (figure 1[15A, 15B]) made of aluminum and a metal column (figure 1[13]) made of aluminum alloy (abstract). Makoto clearly shows a space between the inner wall of the through hole and the outer wall of the metal column in figure 1[12]. Furthermore, figures 1c, 1d, 2, 3a, and 3b of Makoto define the space along the length of the column. Makoto also discloses a through hole with diameter of 1.0mm (paragraph 18) and a metal cylinder with diameter of 0.8mm (paragraph 20). Thus, the space between each wall of the column and substrate is respectively 0 to 0.1mm (100 μm) and fits within the applicants said range of 30 to 200 μm in length. Makoto does not specifically disclose the metal column alone to be 0 to 150 μm shorter than the length of the through hole. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Makoto by limiting the height of the metal column to 0 to 150 μm relative to the thickness of the substrate in order to create a circuit board for large power to offer and combine the through hole structure where resistance is low with the simple flow approach of the diameter of the through hole (paragraph 6).

Response to Arguments

Applicant's arguments filed February 10, 2006 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "the space is not filled with the brazing material" p. 6 lines 4-5) are not recited in

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the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant argues Makoto fails to teach or suggest a cavity along the entire length of the metal column (p. 6, lines 21-22). However the examiner disagrees and points out that figures 1c, 1d, 2, 3a, and 3b of Makoto define the space along the length of the column.

Applicant also argues that the art (JP 2001068808 A) made of record by the examiner neither describes nor suggests the presently claimed invention (p. 7, lines 6-8). The examiner disagrees and notes that the art discloses features of claimed invention despite full disclosure of all of the embodiments of the claimed invention. For example, JP 2001068808 A discloses a metal circuit board fixed to each side of a ceramic board provided with a through-hole so as to stop up the through-hole, and a metal column of metal material (abstract English translation). JP 2001068808 A also discloses a metal column formed of a good conductor metal material such as copper, aluminum, silver or the like (abstract English translation).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rachel E. Beveridge whose telephone number is 571-272-5169. The examiner can normally be reached on Monday through Friday, 9 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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JONATHAN JOHNSON
PRIMARY EXAMINER